WE CLAIM:

1.   Apparatus for processing data, said apparatus comprising

at least two trace data sources, each of said at least two trace data sources being operable to generate a respective trace data stream;

a reference timestamp generator operable to generate reference timestamp data;

a trace data annotator operable to output said trace data streams together with said reference timestamp data associated with points within said respective trace data streams to provide temporal correlation between said at least two trace data sources.

2.   Apparatus as claimed in claim 1, wherein one of said trace data sources also serves as said reference timestamp generator.

3.   An apparatus as claimed in claim 1, wherein said trace data annotator is operable to output said trace data streams and a distinct data stream comprising said reference timestamp data.

4.   An apparatus as claimed in claim 1, wherein said trace data annotator is operable to insert said reference timestamp data into at least one of said trace data streams to generate a respective individual annotated trace data stream.

5.   An apparatus according to claim 1, wherein said trace data streams from said at least two trace data sources are locally cycle-accurate trace data streams.

6.   An apparatus as claimed in claim 1, comprising at least two local clock sources associated with respective ones of said at least two trace data sources, each of said at least two local clock sources being operable to generate local timestamp data associated with said points in said trace data streams.

7.   An apparatus as claimed in claim 6, wherein said trace data annotator is operable to output said local timestamp data together with said reference timestamp data and said trace data streams.

8.   An apparatus as claimed in claim 1, wherein at least one of said at least two trace data sources comprises a marker packet generator operable to output a marker packet at a marker point in the corresponding trace data stream and to issue a request to said reference timestamp generator to output reference timestamp data associated with said marker point.

9.   An apparatus as claimed in claim 8, wherein said marker packet generator is operable to include in said marker packet a trace source identifying signal that identifies the associated trace data source.

10.   An apparatus as claimed in claim 8, wherein said marker packet generator is operable to include in said marker packet local timestamp data from the respective trace data source and corresponding to said marker point.

11.   An apparatus according to claim 1, comprising a combiner operable to combine said trace data streams and said reference timestamp data for output to a trace data stream processor.

12.   An apparatus according to claim 1, wherein at least one of said at least two trace data sources comprises a software-triggered trace data generator such that a software-controlled write to one or more predetermined memory locations triggers generation of a trace data stream by said software-triggered trace data generator.

13.   An apparatus according to claim 1, wherein at least one of said at least two trace data sources includes:

    a processor core;
    a digital signal processor; and
    a memory bus monitor.

14.   An apparatus as claimed in claim 1, wherein said apparatus comprises an integrated circuit.

15.   A method of processing data, said method comprising the steps of:

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generating at least two trace data streams from respective trace data sources;

generating reference timestamp data associated with points in said at least two trace data streams;

annotating said at least two trace data streams by outputting said at least two trace data streams together with said reference timestamp data associated with said points in said at least two data streams to provide temporal correlation between said at least two trace data sources.

16. A method as claimed in claim 15, wherein said annotation comprises outputting each of said at least two trace data streams and a distinct data stream comprising said reference timestamp data.

17. A method as claimed in claim 15, wherein said annotation comprises inserting said reference timestamp data into at least one of said at least two trace data streams to generate a respective individual annotated trace data stream.

18. A method as claimed in claim 15, wherein said trace data streams from said at least two trace data sources are cycle-accurate trace data streams.

19. A method as claimed in claim 15, comprising the step of generating, via each of said trace data sources, local timestamp data associated with said points in said trace data streams.

20. A method as claimed in claim 19, wherein said annotation comprises outputting said local timestamp data together with said reference timestamp data and said trace data streams.

21. A method as claimed in claim 15, comprising the step of outputting, via at least one of said trace data sources, a marker packet at a marker point in the corresponding trace data stream and sending a request to a reference timestamp generator to output reference timestamp data associated with said marker point.

22. A method as claimed in claim 21, wherein said marker packet comprises a trace source identifying signal that identifies the associated trace data source.

23.   A method as claimed in claim 21, wherein said marker packet comprises local timestamp data from the respective trace data source and corresponding to said marker point.

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24.   A method as claimed in claim 15, comprising the step of combining said trace data streams and said reference timestamp data for output to a trace data stream processor.

10   25.   A method as claimed in claim 15, wherein said step of generating said at least two trace data streams comprises using a software triggered trace data generator to trigger generation of a trace data stream using a software-controlled write to one or more predetermined memory locations.

15   26.   A method according to claim 15, wherein at least one of said trace data sources includes:

        a processor core;

        a digital signal processor; and

        a memory bus monitor.

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27.   A method as claimed in claim 15, wherein said method is performed upon an integrated circuit.

28.   A computer program product carrying a computer program for controlling a

25   data processing apparatus to analyse at least two annotated trace data streams comprising trace data together with reference timestamp data associated with points within said at least two data streams, said computer program product comprising:

        trace data processing code operable to perform temporal correlation between said points in said at least two trace data streams using said reference timestamp data.

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29.   A computer program product as claimed in claim 28, wherein said trace data processing code is operable to perform temporal correlation between two trace events from different trace data streams.

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30.   A computer program product as claimed in claim 28, wherein said trace data processing code is operable to perform an interpolation between two of said points in a given one of said at least two trace data streams.